Amendments to the Claims:

Claims previously numbered by Applicants as 8 through 23 have been renumbered to claims 10 through 25 and claims 8 and 9 have been canceled, as the Examiner has requested. Please note that the new claim numbering has not been shown as an amendment using the underline and strikethrough identifiers. Renumbered claims that have not been previously amended and with no change in a dependency reference (namely claims 10-12, and 15) are listed with the status identifier (Original) even though the claim numbers have changed. Renumbered previously amended independent claims (namely 16 and 23) are listed with the status identifier (Previously presented) even though the claim numbers have changed. Finally, renumbered claims with no change except renumbering and a change in the dependent claim reference (namely claims 13, 14, 17-22, 24, 25) are listed with the status identifier (Currently Amended) and only the change in claim dependency is shown as amended.

Additionally, claims 1, 5, and 7 have proposed amendments with changes herein.

Please note that all claims currently pending and under consideration in the referenced application are shown below. Please enter these claims as amended. This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1. (Currently amended) In a system including spatial data for a spatial environment, wherein a recipe is used in the spatial environment, a method for mining the spatial data to optimize the recipe for one or more target values, the method comprising:

an act of generating a data set from the spatial data using identified attributes selected by a user, the data set being varyingly complex based upon the identified attributes selected by the user;

an act of partitioning the spatial data into a training set and at least one modeling set wherein the act of partitioning is selected from the group consisting of:

selecting the training set such that the training set comprises a substantially homogenous spatial relationship to the at least one modeling set, and

selecting the training set such that the training set comprises a substantially separate spatial relationship to the at least one modeling set;

an act of inspecting the generated data set to provide statistical information for the data set;

an act of preprocessing the data set to prepare the data set for modeling;

an act of modeling the preprocessed data set to describe relationships between the attributes and the one or more target values; and

an act of providing recommendations such that the recipe is optimized.

2. (Original) A method as defined in claim 1, wherein the act of preprocessing the data set further comprises:

an act of cleaning the generated data set;

an act of interpolating the generated data set;

an act of normalizing the generated data set; and

an act of generating new attributes.

3. (Original) A method as defined in claim 1, wherein the recipe is a fertilizer recipe for use in an agricultural field.

4. (Original) A method as defined in claim 1, wherein a crop yield is included in the one or more target values.

5. (Currently amended) A method as defined in claim 1, further wherein the relationships include relationships between the training set and the at least one modeling set ~~one or more clusters~~, wherein the training set ~~a first cluster from first spatial data corresponding to a first spatial environment~~ is used to optimize a recipe for the at least one modeling set ~~a second spatial environment~~.

6. (Original) A computer program product having computer executable instructions

for executing the acts recited in claim 1.

7. (Currently amended) In a system including one or more spatial databases corresponding to one or more spatial environments, a system for knowledge discovery from the one or more spatial databases, the system comprising:

a user interface; and

a spatial data modeling and analysis module (SDAM module) for extracting knowledge from the one or more spatial databases, the SDAM module comprising:

a data generation and manipulation module for loading a ~~the~~ data set from the one or more spatial databases based on designated attributes, wherein the attributes are selected and supplied to the data generation and manipulation module by a user through the user interface;

a data inspection module for providing spatial statistics on the loaded data set;

a data preprocessing module for preparing the data set for modeling, wherein the data preprocessing module removes errors from the data set;

a data partitioning module for dividing the data set into a training set and at least one modeling set wherein the dividing is selected from the group consisting of;

dividing such that the training set comprises a substantially homogeneous spatial relationship to the at least one modeling set, and

dividing such that the training set comprises a substantially separate spatial relationship to the at least one modeling set;

~~homogenous data segments which improve data modeling;~~ and

a modeling module for describing relationships between the attributes and one or more target values, wherein the relationships are obtained from the training set and applied to the at least one modeling set ~~partitioned data set~~.

8. (Canceled)

9. (Canceled)

10. (Original) A system as defined in claim 7, wherein the SDAM module further comprises an integration module for enhancing the knowledge generated from the one or more spatial databases.

11. (Original) A system as defined in claim 7, wherein the preprocessing module further comprises:

a cleaning and filtering module for removing duplicate data and removing noise from the loaded data set;

a data interpolation module for computing common values for a common set of locations;

a data normalization module for transforming the loaded data set to a normal distribution and for scaling the loaded data set to a range;

a data discretization module for use in modeling the loaded data set;

a generating new attributes module for combining existing attributes into a single attribute;

a feature selection module for reducing the attributes identified by a user such that irrelevant attributes may be removed; and

a feature extraction module for reducing a dimensionality of the loaded data set.

12. (Original) A system as defined in claim 7, further comprising a recommendation module, wherein the recommendation module optimizes a recipe for a spatial environment.

13. (Currently amended) A system as defined in claim 12 [[10]], wherein the recommendation module includes at least one of: a fertilization module for optimizing a fertilizer recipe to be applied to an agricultural field; an irrigation module for optimizing a water recipe to be applied to a field; and an equipment module for optimizing a recipe to be applied to equipment.

14. (Currently amended) A system as defined in claim 13 [[11]], wherein the recommendation module includes at least one of: a pesticide module, a herbicide module, and a seed-spacing module.

15. (Original) A system as defined in claim 7, wherein each of the data generation and manipulation module, the data inspection, the data preprocessing module, the data partitioning module, and the modeling module can be independently controlled by the user through the user interface.

16. (Previously presented) In a networked computer system that includes a client and a server, wherein the server maintains spatial data sets, a method for analyzing the spatial data sets over the network, the method comprising the steps for:

applying spatial data mining functions to the spatial data sets, the spatial data sets generated using identified attributes selected by a user, wherein said spatial data mining functions comprise the steps for

modeling the spatial data sets to provide estimation of predetermined parameters at predetermined points; and

classifying the spatial data sets into predetermined classes; and

using the estimation of the predetermined parameter to accomplish a predetermined purpose, wherein the predetermined purpose includes at least one of determining how the predicted variable affects a predetermined target variable, providing recommendations as to how to achieve a predetermined target variable, and creating new spatial data mining methods.

17. (Currently amended) A method as defined in claim 16 [[14]], further comprising the step for combining different programming environments to allow different programming environments to function on one server.

18. (Currently amended) A method as defined in claim 17 [[15]], wherein the step for combining different programming environments comprises a unified controller.

19. (Currently amended) A method as defined in claim 16 [[14]], wherein the spatial data set is generated by a spatial data simulator.

20. (Currently amended) A method as defined in claim 16 [[14]], wherein said spatial data mining functions further comprise the step for partitioning said data set into more homogenous portions.

21. (Currently amended) A method as defined in claim 16 [[14]], wherein said spatial data mining functions further comprise the step for integrating said modeling and classifications steps.

22. (Currently amended) A computer program product having computer executable instructions for performing the steps recited in claim 16 [[14]].

23. (Previously presented) In an environment including spatial data relating to a specific agricultural field, a method for analyzing the spatial data comprising steps for:

applying spatial data mining functions to the spatial data, the spatial data generated using identified attributes selected by a user, wherein said spatial data mining functions comprise the steps for

modeling the spatial data to provide estimation of predetermined parameters at predetermined points; and

classifying the spatial data into predetermined classes; and

using the estimation of the spatial data analysis to optimize the treatment of the agricultural field to produce a predetermined yield.

24. (Currently amended) A method as defined in claim 23 [[21]], wherein said spatial

data consists of past and present data of a specific agricultural field.

25. (Currently amended) A method as defined in claim 23 [[21]], wherein the step for applying spatial data mining functions occurs in a network environment.